AMENDMENTS TO THE SPECIFICATION

Please replace the paragraph beginning on page 1, last paragraph, ending at page 2, line 5, with the following amended paragraph:

Simulating a dynamic system in a time-based block diagram is typically a two-step process. First, a user creates a graphical model, such as a block diagram, of the system to be simulated. A graphical model may be created using a graphical user interface, such as a graphical model editor. The graphical model depicts time-based relationships between the systems inputs, states, parameters and outputs. After creation of the graphical model, the behavior of the dynamic system over a specified time period is simulated using the information entered into the graphical model. In this step, the graphical model is used to compute and trace the temporal evolution of the dynamic systems' outputs ("execute" the graphical model), and automatically produce either deployable software systems or descriptions of hardware systems that mimic the behavior of either the entire model or portions of the model (code generation).

Please replace the paragraph beginning on page 2, last paragraph, ending at page 3, line 6, with the following amended paragraph:

For example, in Simulink®, an example of a time-based block diagram from The Math Works Inc., a model of a dynamic system is a block diagram comprising a plurality of nodes, called blocks, which are interconnected by lines that represent signals. In Simulink®, each block represents a functional entity, such as an elementary dynamic system, which implements a mathematical operation, i.e., an algorithm or equation, on the data being processed by the system represented by the block diagram. Each block produces an output either continuously (a continuous block) or at specific points in time (a discrete block). The type of the block determines the relationship between a block's outputs and its inputs, states, and time. A block diagram can contain any number of instances of any type of block needed to model a system. The signals in a block diagram model represent a time-varying quantity that is updated, i.e. read[[y]]-by and written-to,

by the blocks. Simulink® and other software products for modeling a dynamic system provide a graphical user interface (GUI) for building models of dynamic systems as block diagrams. Each block diagram may be built by dragging and dropping blocks provided in pre-defined blocksets or custom developed by the user.

Please replace the third paragraph on page 4 with the following amended paragraph:

An embodiment of the present invention extends the capabilities of bus signals in a graphical modeling environment, such as a time-based block diagram for modeling, simulating, and analyzing dynamic systems. An illustrative embodiment of the present invention provides a system and method for performing a non-virtual operation on a bus signal comprised of signals of different data types and the ability to specify a definition for a bus signal in a time-based block diagram or other graphical modeling environment. The present invention also implements both static and dynamic checks during construction and/or simulation of a block diagram to enforce a bus specification. The present invention formalizes bus signals in a graphical modeling environment to make bus signals more effective, intuitive and easier to use, thereby simplifying a block diagram that implements bus signals.